I. AMENDMENTS TO THE CLAIMS:

Kindly amend claims 18, 19, 24, 27-30, 36 and 37, and add new claim 38, as follows. These claims will replace all prior versions of claims in the present application.

Listing of Claims:

Claims 1 to 17 have been cancelled.

18. (Currently Amended) A wireless data communication method between a transmitter device having a first wide band antenna for transmitting ultra wide band coded data signals, and a receiver device having a second wide band antenna for receiving direct path and multiple path coded data signals, wherein the method comprises the steps of:

(a) defining transmitted data by one or more sequences of N pulses where N is an integer number higher than 1, wherein the arrangement of N pulses of each sequence represents encoding of data relating to the transmitter device;

(b) the receiver device receiving the N pulses of one pulse sequence of direct path and multiple path coded data signals, wherein the N pulses are each processed in one of N corresponding reception time windows, wherein each of the N reception time windows is positioned in time as a function of a known theoretical arrangement of the N pulses of the signals transmitted by the transmitter device; and

(c) carrying out, in the receiver device, an operation of adding the N windows in a coherent manner before data demodulation so that added pulse amplitude level is higher than noise amplitude level captured by the receiver device.~~,~~

~~wherein the transmitter device includes~~

~~i. a first oscillator stage delivering at least one first clock signal at a first defined frequency;~~

~~ii. a first signal processing unit clocked by the clock signal provided by the first oscillator stage in order to modulate the data to be transmitted; and~~

~~iii. a unit for shaping the N pulses of each sequence to be transmitted by the first wide band antenna of the transmitter device as a function of the data modulation provided by the first signal processing unit; and~~

~~wherein the receiver device includes~~

~~i. a second oscillator stage delivering at least one second clock signal at a second defined frequency;~~

~~ii. a second signal processing unit connected to the second oscillator stage; and~~

~~iii. an analogue-digital conversion stage for analogue signals relating to the coded data signals received by the second wide band antenna, wherein~~

~~the method further comprises the step of:~~

(d) performing an operation of adding the N time windows before or after analogue-digital conversion of the analogue signals, and wherein the analogue signal pulses are sampled in the analogue-digital conversion stage by at least one sampling signal supplied by a~~the second~~ signal processing unit, wherein the sampling signal has a frequency proportional to a~~the second~~ frequency of a~~the second~~ clock signal; and

(e) calculating several absolute value maximum amplitude values for signals in time sub-windows of defined length T_X, wherein each of the sub-windows is time shifted in relation to each other by a determined time interval from the start of the reception time window to the end of said time window.

19. (Currently Amended) A wireless data communication method according to claim 18, wherein a first~~the second~~ clock signal frequency for clocking various operations of the receiver device is proportionally adapted to a reference~~the first~~ clock signal frequency of

the transmitter device by controlling the pulse amplitude level of a final window adding the N windows until said amplitude level is maximised, wherein the reference ~~first~~ clock signal frequency is used to generate ultra-wide band coded data signals.

20. (Previously Presented) A wireless data communication method according to claim 18, wherein the transmitter device transmits coded data signals, in which the data is coded by pulse position modulation of each sequence, or by pulse polarity or by phase modulation of each sequence, or by pulse position and polarity modulation of each sequence.

21. (Previously Presented) A wireless data communication method according to claim 18, wherein the coded data signals include a synchronisation frame allowing the receiver device to recognise the transmitter device and to be synchronised on said frame before demodulating the received data, wherein said synchronisation frame is composed of one or several sequences of N pulses of determined pulse repetition frequency.

22. (Previously Presented) A wireless data communication method according to claim 18, wherein the identical width of each of the N time windows is smaller than the reverse of the mean pulse repetition frequency of a sequence of coded data signals to be transmitted, and wherein said time window width is adapted to receive the pulses of the direct path and multiple path signals captured by the receiver device of width greater than 20 ns.

23. (Cancelled)

24. (Currently Amended) A wireless data communication method according to claim 18, wherein the time window signals are successively added and stored in at least one register of the~~the second~~ signal processing unit.

25. (Previously Presented) A wireless data communication method according to claim 19, wherein each reception window, positioned in time in relation to the known theoretical arrangement of each pulse of the received data signals, is centered relative to a theoretical reference value or relative to the maximum added pulse amplitude of the direct path signals and multiple path signals captured by the receiver device.

26. (Previously Presented) A wireless data communication method according to claim 20, wherein the reference signals of identical polarity to the polarity of the coded signals received by the receiver device are correlated prior to addition of the resulting pulses of each time window.

27. (Currently Amended) A wireless data communication method according to claim 18, wherein the ~~second~~ signal processing unit includes means for adding the digital windows and means for estimating the time of arrival of the coded data signals, wherein before or after the time window addition operation is performed, the method further includes the steps of:

(f)~~(e) calculating several absolute value maximum amplitude values for signals in time sub-windows of defined length~~ ~~T_N~~~~, wherein each of the sub-windows is time shifted in relation to each other by a determined time interval from the start of the reception time window to the end of said time window; and~~

~~(f)~~ estimating a noise amplitude level by selecting the minimum amplitude value from all the calculated amplitude values.

28. (Currently Amended) A wireless data communication method according to claim 18, wherein the method further includes the following steps:

(f)~~(e)~~ calculating a positive envelope of the signals of one time window by

i. determining all the zero crossing positions p_i of the time window signals;

ii. determining the coordinates of the absolute value amplitude maximum in each interval from p_i to p_{i+1}, with i ranging from 1 to I-1, wherein I is an integer number higher than 3; and

iii. calculating the positive envelope by using a specific interpolation algorithm passing through the determined coordinates.

29. (Currently Amended) A wireless data communication method according to claim 28, wherein the method further includes the following steps:

(g)~~(f)~~ calculating the time of arrival of the first signals captured by the receiver device by

i. calculating an amplitude threshold th based on the amplitude maximum of the envelope and an estimated noise amplitude level;

ii. estimating the rising edge of the positive envelope where the threshold th is exceeded for the first time;

iii. estimating the maximum local point of the positive envelope at the coordinates that directly follow the point where the positive envelope passes above the

threshold th, and the minimum local point of the envelope at the coordinates that precede the point where the positive envelope passes above the threshold th;

iv. calculating the intermediate coordinates between the minimum point and the maximum point;

v. approximating at the position of intermediate coordinates a selected segment of samples of the positive envelope with a given function; and

vi. determining the time of arrival of the first signals captured by the receiver device at the zero crossing or another value of the determined function.

30. (Currently Amended) A wireless data communication method according to claim 18, wherein the ~~second~~ signal processing unit includes control means for providing control signals to digital window addition means in order to modify the time or mean repetition frequency scale of N windows to be added from digital window addition means, wherein a re-sampling operation is carried out in the ~~second~~ signal processing unit of the receiver device with a different re-sampling frequency from the sampling frequency of the analogue-digital conversion stage, wherein said re-sampling frequency generated by the control means is higher than the sampling frequency in order to increase precision for positioning purposes.

31. (Previously presented) A receiver device for implementing the wireless data communication method according to claim 18, wherein the receiver device has a second wide band antenna for receiving direct path and multiple path coded data signals from a transmitter device, wherein the receiver device includes

i. an oscillator stage delivering at least one clock signal at a defined frequency;

ii. a signal processing unit connected to the oscillator stage;

iii. an analogue-digital conversion stage for analogue signals relating to the coded data signals received by the second wide band antenna, wherein the signal processing unit includes time window addition means for coherently adding up the pulses of each of the N time windows before or after analogue-digital conversion of the analogue signals; and

iv. demodulation means for demodulating data from digital signals after the time window addition means,

wherein the analogue-digital conversion stage operates to sample the analogue signal pulses by at least one sampling signal supplied by the signal processing unit, wherein said sampling signal has a frequency proportional to the clock signal frequency of the receiver device.

32. (Previously Presented) A receiver device according to claim 31, wherein the clock signal frequency of the oscillator stage is proportionally adapted by the processing unit to a reference clock signal frequency of an oscillator stage of the transmitter device by controlling the pulse amplitude level of a final addition window of the N windows from the addition means until said amplitude level is maximised, wherein the oscillator stage is used to generate ultra-wide band coded data signals.

33. (Previously Presented) A receiver device according to claim 31, wherein the time window addition means receive digital signals from the analogue-digital conversion stage for adding up the digital windows.

34. (Previously Presented) A receiver device according to claim 31, wherein the time window addition means receive analogue data signals from the second wide band antenna in order to add up the analogue windows.

35. (Previously Presented) A wireless data communication method according to claim 29, wherein the given function is an affine function.

36. (Currently Amended) A wireless data communication method between a transmitter device having a first wide band antenna for transmitting ultra wide band coded data signals, and a receiver device having a second wide band antenna for receiving direct path and multiple path coded data signals, wherein the method comprises the steps of:

(a) defining transmitted data by one or more sequences of N pulses where N is an integer number higher than 1, wherein the arrangement of N pulses of each sequence represents encoding of data relating to the transmitter device;

(b) the receiver device receiving the N pulses of one pulse sequence of direct path and multiple path coded data signals, wherein the N pulses are each processed in one of N corresponding reception time windows, wherein each of the N reception time windows is positioned in time as a function of a known theoretical arrangement of the N pulses of the signals transmitted by the transmitter device; and

(c) carrying out, in the receiver device, an operation of adding the N windows so that added pulse amplitude level is higher than noise amplitude level captured by the receiver device, wherein the receiver device further comprises a second signal processing unit that includes means for adding the digital windows and means for estimating the time of arrival of the coded data signals, wherein before or after the time window addition operation is carried out, the method further includes the steps of

(d) calculating several absolute value maximum amplitude values for signals in time sub-windows of defined length T_N, wherein each of the sub-windows is time shifted in

relation to each other by a determined time interval from the start of the reception time window to the end of said time window; and

(e) estimating a noise amplitude level by selecting the minimum amplitude value from all the calculated amplitude values.

37. (Currently Amended) A wireless data communication method between a transmitter device having a first wide band antenna for transmitting ultra wide band coded data signals, and a receiver device having a second wide band antenna for receiving direct path and multiple path coded data signals, wherein the method comprises the steps of:

(a) defining transmitted data by one or more sequences of N pulses where N is an integer number higher than 1, wherein the arrangement of N pulses of each sequence represents encoding of data relating to the transmitter device;

(b) the receiver device receiving the N pulses of one pulse sequence of direct path and multiple path coded data signals, wherein the N pulses are each processed in one of N corresponding reception time windows, wherein each of the N reception time windows is positioned in time as a function of a known theoretical arrangement of the N pulses of the signals transmitted by the transmitter device; ~~and~~

(c) carrying out, in the receiver device, an operation of adding the N windows in a coherent manner before data demodulation so that added pulse amplitude level is higher than noise amplitude level captured by the receiver device,

wherein the transmitter device includes

i. a first oscillator stage delivering at least one first clock signal at a first defined frequency;

ii. a first signal processing unit clocked by the clock signal provided by the first oscillator stage in order to modulate the data to be transmitted; and

iii. a unit for shaping the N pulses of each sequence to be transmitted by the first wide band antenna of the transmitter device as a function of the data modulation provided by the first signal processing unit; and

wherein the receiver device includes

i. a second oscillator stage delivering at least one second clock signal at a second defined frequency;

ii. a second signal processing unit connected to the second oscillator stage; and

iii. an analogue-digital conversion stage for analogue signals relating to the coded data signals received by the second wide band antenna; and

(d) calculating several absolute value maximum amplitude values for signals in time sub-windows of defined length T_N, wherein each of the sub-windows is time shifted in relation to each other by a determined time interval from the start of the reception time window to the end of said time window.

38. (NEW) A wireless data communication method between a transmitter device having a first wide band antenna for transmitting ultra wide band coded data signals, and a receiver device having a second wide band antenna for receiving direct path and multiple path coded data signals, wherein the method comprises the steps of:

(a) defining transmitted data by one or more sequences of N pulses where N is an integer number higher than 1, wherein the arrangement of N pulses of each sequence represents encoding of data relating to the transmitter device;

(b) the receiver device receiving the N pulses of one pulse sequence of direct path and multiple path coded data signals, wherein the N pulses are each processed in one of N corresponding reception time windows, wherein each of the N reception time windows is

positioned in time as a function of a known theoretical arrangement of the N pulses of the signals transmitted by the transmitter device; and

(c) carrying out, in the receiver device, an operation of adding the N windows in a coherent manner before data demodulation so that added pulse amplitude level is higher than noise amplitude level captured by the receiver device,

wherein the transmitter device includes

i. a first oscillator stage delivering at least one first clock signal at a first defined frequency;

ii. a first signal processing unit clocked by the clock signal provided by the first oscillator stage in order to modulate the data to be transmitted; and

iii. a unit for shaping the N pulses of each sequence to be transmitted by the first wide band antenna of the transmitter device as a function of the data modulation provided by the first signal processing unit; and

wherein the receiver device includes

i. a second oscillator stage delivering at least one second clock signal at a second defined frequency;

ii. a second signal processing unit connected to the second oscillator stage; and

iii. an analogue-digital conversion stage for analogue signals relating to the coded data signals received by the second wide band antenna, wherein

the method further comprises the steps of:

(d) performing an operation of adding the N time windows before or after analogue-digital conversion of the analogue signals, and wherein the analogue signal pulses are sampled in the analogue-digital conversion stage by at least one sampling signal supplied by the second signal processing unit, wherein the sampling signal has a frequency proportional to the second frequency of the second clock signal; and

(e) calculating several absolute value maximum amplitude values for signals in time sub-windows of defined length T_N, wherein each of the sub-windows is time shifted in relation to each other by a determined time interval from the start of the reception time window to the end of said time window.